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RELEASE NOTES FOR WHFS VERSION 3.0

(FOR AWIPS RELEASE 5.0)

Original Release: Apr 28, 2000
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INTRODUCTION

The following paragraphs describe the changes made to the WHFS applications and the IHFS Database for delivery with AWIPS Release 5.0. For AWIPS Release 5.0, the WHFS applications move to Version 3.0 and the IHFS Database moves to Version 2.0.

Conversion scripts are supplied to modify a site's hd1_2sss IHFS Informix database to the new version, hd2_0sss. The database conversion scripts are incorporated into the AWIPS Release 5.0 OH installation scripts. They modify a site's database in place and then rename it for this release.

A. The Database, IHFS_DB Version 2.0:
(NOTE: complete details of all IHFS Database modifications will be posted on OH Web pages prior to AWIPS Release 5.0 - this is a high level summary.)

1) The dynamic observation and forecast data tables are modified to include AWIPS product identifier, product time, and database posting time to aid in the traceability of data values to AWIPS products.

2) A new table, AlertAlarmVal, is added to support the new automatic alert/alarm features of the Hydro data ingest process.

3) The DefaultRangeCheck and LocRangeCheck tables are replaced by the more general tables DataLimits and LocDataLimits to support expanded quality control mechanisms and the new automatic alert/alarm features.

4) A new table, FFMPThreat, is added to support the tabular flash flood threat display in the new SCAN/FFMP function in D2D.

5) A new table, GateDam, is added to allow storage and use of SHEF N* physical elements (gate and dam data).

6) The ManRejectObs table is replaced with the new RejectedData table that now supports forecast as well as observation data and that now supports automatic reject mechanisms as well as manual.

7) Records are deleted from and added to the PurgeDynData table to account for deleted and added dynamic data tables.

8) The quality_code field in all of the dynamic data tables is redefined as a 32-bit bit mask to be able to support new quality control checks in this release and to support more checks coming in the future. A document will be posted on the OH Web site describing this new definition. Due to the re-definition of the quality_code field, the QualityCode look-up table is removed.

9) Eight new tables are added to support the new Multi-sensor Precipitation Estimator (MPE) application being field evaluated at RFCs during AWIPS Release 5.0. Those tables are: ProcPrecip, RWBiasDyn, RWBiasStat, RWParams, RWPrefs, RWRadarResult, RWResult, and RWVerif.

10) The old CurHeight table is replaced by the new RiverStatus table so that HydroView and RiverPro can now use both river flow and river stage for analyzing current conditions at river stations. The user may choose their desired H or Q physical element to be tracked for each river station.

11) The Riverstat (i.e., river station reference) table is modified to add primary_pe, action_flow, and use_latest_fcst to support the new use of flow and stage data by HydroView and RiverPro. Existing data from the RpfFcstPoint table and the /awips/hydroapps/whfs/local/data/app/hydroview/lid_pe.dat file are merged into the new primary_pe field of the revised Riverstat table.

12) RpfFcstPoint and RpfParams tables are modified in support of the new use of the Riverstat fields and the improved use of TS ranks in the IngestFilter table by RiverPro.

13) A new table, ShefPETrans, is added to allow RiverPro to translate coded SHEF physical element values into English phrases such as for present weather, past weather, etc.

14) The old ShefUnits table is deleted and the ShefPe table is expanded to include English and Metric units labels to more fully support the new Hydro Time Series displays.

15) The data in the ShefQc table is expanded to add four new SHEF qualifier descriptors, "G", "B", "P", and "M", to make a total of 12 now. This is to support expanded quality control efforts and to provide compatibility with new work being done with LDAD MSAS quality control of locally ingested data.

16) The expansion of the dynamic observation and forecast data tables mentioned in item 1) above now renders the tables FcstValue, ObsValue, and ObsValueDup obsolete. They still exist but can be turned off with SHEF Decoder .Apps_defaults_site tokens and will be removed in a later release.

17) The database views used by the ofsde batch program at RFCs are modified to improve performance by restructuring the view SQL and by removing the SQL filter on the quality_code field. Other database views are modified to account for various table changes and application functionality changes.

18) The database stored procedures are modified to account for table changes and the move from the stage based CurHeight table to the stage and flow based RiverStatus table.

19) A new UNIX configuration file for the new Hydro Time Series application is provided at:

/awips/hydroapps/whfs/local/data/app/timeseries/group_definition.cfg.

20) The Informix database space used for the IHFS Database, dbihfs, is expanded in size from 312MB to 624MB at WFOs to support Service Backup needs.

B. HydroBase Database Manager, Version 3.0:

1) The county column of the main window is now presented as state,county and sorting stations using this column sorts state followed by county to more easily distinguish counties that have the same names in neighboring states.

2) A new menu item is provided in the Setup pull down menu option to invoke a UNIX editor to modify the new configuration file for the new Hydro Time Series application located at:

/awips/hydroapps/whfs/local/data/app/timeseries/group_definition.cfg.

3) Users may now enter negative station location elevations.

4) The problem of the E-19A report pushing onto a second page is fixed.

5) The Setup/Areal Definitions dialog is fixed so that users may delete individual areas (i.e., basins, zones, counties, water bodies).

6) The feature to e-mail reports is removed because AWIPS architecture does not allow the e-mail to travel beyond the local workstation.

7) The River Gage dialog is updated to manage the choice of the representative physical element (stage or flow) for the station, to add the ability to define the action flow value, and to allow the user to specify how to compute the maximum forecast value used by HydroView and RiverPro. Here is where the user may set up some river stations with stage physical elements and some with flow physical elements so that HydroView and RiverPro may use a mixed set of stations in threat computations and displays. Here also is where the user sets which stage (e.g., HG, HT, HP) or which flow parameter to use for a river station. WHFS no longer uses the temporary configuration file:

/awips/hydroapps/whfs/local/data/app/hydroview/lid_pe.dat

for this purpose.

Note, the FloodSeq batch program also now uses the desired station physical element instead of the old lid_pe.dat file as long as it is stage only.

Note, that for now, through this Release 5.0, flood categories (i.e., minor, moderate, and major) can only be set for stage OR flow but not both. In the next release the user will be able to store BOTH stage-based and flow-based flood categories.

8) The two RiverPro parameters dialogs under the Setup pull down menu are simplified by removing the SHEF type-source choice (which is now in the IngestFilter dialog), by removing the use_latest_forecast choice (which is now in the River Gage dialog), by removing the desired PE choice (which is now in the River Gage dialog), and by removing the use out-of-range choice (made obsolete by enhanced quality control processing).

9) The Dam Catalog interface is fixed so that dam break forecast data are not shown for dams that do not have that data. Before this fix, the Dam Catalog interface would show dam break forecast data from the previously selected dam.

10) A new dialog, QC/Alert/Alarm Limits is added in place of the old Range Check dialog to allow the user to set all quality control ranges, alert thresholds, and alarm thresholds for any physical element at any station. As before the user may set general limits that apply to all stations and then may override those limits on a station-by-station basis.

11) The user may now print impact statements and save them to UNIX text files from the Impact Statement dialog.

12) The user may now sort historical crest events by date in the Crest History dialog.

13) The user may now define a new station location with the data posting switch set to no post. Previously, this was prevented.

C. HydroView Data Viewer, Version 3.0:

1) The "tool area" to the left of the HydroView map has been removed to provide more space for map data to be plotted. User interactions provided in the tool area have been moved:

-- the Selected Station information is now on the top window bar
-- the Display Control button is now the Map Display Control... choice on the LiveData pull down menu
-- the Station Selection button is now on the Background pull down menu
-- the Refresh Data button is now on the LiveData pull down menu
-- the Station Legend button is now the Legend... choice on the Help pull down menu

All of these interactions operate the same as they did before.

2) The LiveData pull down menu has undergone several significant changes. To summarize:

-- Graphical Time Series... is now embodied in the new Time Series Control...
-- Station Observations... is now embodied in the new Time Series Control...
-- Station Forecasts... is now embodied in the new Time Series Control...
-- River Summary... has not changed
-- Station Profile... has not changed
-- Station Reporting Status... is now titled Station Reporting Status/Latest Observations... to more clearly reflect its purpose
-- Out-of-Range Data... has been replaced by Questionable and Bad Data...
-- Manually Rejected Obs... has been replaced by Rejected Data Trash Can...
-- There is a new selection, Alert and Alarm Data...
-- There is a new selection, Point Precipitation Accumulations...
-- Refresh Data has been moved here from the old tool area to the left of the map

3) The time series data display has been completely reworked based on numerous user comments received over the past couple of years. Previously, the time series functionality was only reached from the HydroView LiveData menu. Now, the new time series display is reachable from the HydroView LiveData menu, from some of the data quality control windows in HydroView, from the RiverPro application, and it is being delivered as a stand-alone application (see topic E below). The time series display can still be reached by double clicking a station on the map.

4) The new time series functionality has grouped time series graphs with time series tabular listings (the old Station Observations dialog and the old Station Forecasts dialog) all under one new Time Series Control dialog. So now the user goes to the new Time Series Control to view time series graphs, to edit time series graphs, to view time series tabular displays, to edit time series tabular displays, and to SHEF-encode and send out data to other offices via the AWIPS WAN. Note that all observed and forecast data are now editable (both in the tabular display and the graphical display) and are able to be SHEF-encoded and sent to other offices from within the unified time series functionality.

5) The new Alert and Alarm Data dialog allows the user to view data that have exceeded alert and alarm thresholds based on value and rate-of-change. These data are kept in the IHFS database for a short period (nominally 12 hours but is configurable) due to their perishable nature. The user can sort the data by time or location. The user can filter the data by obs/forecast/both, alert/alarm/both, and value/rate-of-change/both. The user-set alert/alarm limits are provided for reference and the user can jump directly to the new Time Series functionality to view the data within its time series context easily.

6) A new tabular display, "Point Precipitation Accumulations", is added to HydroView under the "LiveData" pull down menu. This window allows the user to request any observed precipitation data, on-the-fly, for all stations or a specified station by choosing the optional station, the type-source(s), the duration, and the ending time. Users may print or save the data to a UNIX text file. Options exist to sort the data, to accumulate PP data for the specified duration, and to provide details. In the multi-station display, the details option shows which values are accumulated versus observed and shows the number of hours covered by the data for the desired duration. In the single-station display, the details option shows the time series of observations for the station. This tabular display augments the map plot of point precipitation.

7) The Rejected Data Trash Can dialog is a rework of the old Manually Rejected Obs dialog. This is mainly because the new RejectedData table holds observed and forecast data which have been rejected either manually or automatically. The old ManRejectObs table only held observed data that was manually rejected. The new dialog allows the user to sort the data by time or location. The user can filter the data by location, physical element, and manual/auto/both. In some ways this dialog acts like the Windows 95/98 Trash Can. The user may select one or more data values and move them back to the main PE data tables, delete them totally from the database, or delete the entire contents of the RejectedData table. If the user does not delete data from the RejectedData table via this interface, they are purged from the database based on retention criteria set in HydroBase.

8) The Questionable and Bad Data dialog is a rework of the old Out-of-Range Data dialog. Previously, the old Out-of-Range data dialog showed the user any data that had failed the gross range check being applied by the SHEF Decoder. In Release 5.0, the data quality control mechanisms have been enhanced to look for questionable data as well as truly bad data.

The new Questionable and Bad (QB) Data dialog shows all data in the database that have been marked as questionable or bad by the quality control processes. In the event that the user has chosen (via .Apps_defaults_site token) for the SHEF Decoder to send all bad data to the RejectedData table, the QB Data dialog will only show questionable data values because this dialog only views data from the normal PE data tables, not the RejectedData table. See Item C.7) just above for a discussion of the Rejected Data Trash Can dialog which views the RejectedData table. If the users directs the SHEF Decoder to send bad data to the normal PE data tables, then both questionable and bad data will be viewed by the QB Data dialog. See Item F.3) below regarding the SHEF Decoder tokens.

In the QB Data dialog, the user sees a listing of data values that are questionable or bad for one data type (e.g., height, precip, temperature) for the past n days. The user may change data types. The user may change the number of lookback days. The user may filter this list to show data for one station only or for all stations. The user may sort the data by location or time. As the user highlights each data row, the QC Description below the data list explains what type(s) of QC tests have failed. If the user wants to see the temporal context of a data value or edit a data value, he/she may jump directly to the Hydro Time Series functionality with the buttons at the bottom of the dialog. The user may jump right into the graphical time series display or the tabular time series display.

Note, questionable data are flagged for further inspection by the user but ARE used in the WHFS applications. They are assumed innocent until proven guilty by manual inspection.

More detailed information on the new quality control features and the new alert/alarm features will be available in other documents posted on the WHFS Support Web pages.

9) The map display of precipitation accumulations at station locations is modified to retrieve and accumulate precipitation data "on-the-fly" so that the data are always up-to-date rather than as much as 40 minutes late due to the pre-computed accumulations previously done by the precip_accum cron job at 25 and 45 minutes after the hour. The advantages are that the user will always be viewing up-to-minute precipitation accumulations and that the overall load on the Informix engine will be less because we won't be computing values all of the time - only when they are required. The only disadvantage is that the user will have to wait a little longer than previously to get the precipitation map display.

10) The Station Reporting Status/Latest Observations dialog has had a bit of a face lift to be more useful. The changes are:
-- the Sort button is simplified to Location and Time.
-- the List button has clearer labels.
-- the SHEF Data Qualifier attribute (SQ) is added to the lower display list.
-- the database posting time is added to the lower display list.
-- the SHEF Revision flag (RV) in the lower display list now uses F (False) and T (True) instead of 0 and 1 for clarity.
-- the old Qual Code column in the lower display list is now QC and it uses the scheme G (good), Q (questionable), and B (bad) due to the enhanced quality control software in this release.
-- Fixed date/times error. For those stations which have never reported observation data, the two time columns were showing 2001-01-01 00:00:00 when they should show blank.
-- other minor cosmetic improvements for clarity.

11) The annoying "Ignore For Now" dialog, that would occasionally pop up during the start up of HydroView, has been removed.

12) The map scroll bars in HydroView now behave properly. That is, when HydroView starts up and when the user recenters the map, the map scroll bars are now automatically positioned at the center of their adjustment range.

13) The staff gage display is modified to exclude any historical crest that is marked as "suppressed" in the Crest table in its computation of the record stage.

14) The user may now print impact statements and save them to UNIX text files from the Impact Statement dialog.

15) The user may now sort historical crest events by date in the Crest History dialog.

16) The station icons used on the map have been shrunk somewhat to provide better visibility of the data. A new option was added to the map display control to allow the user to turn the icons on and off, which will improve the viewability of the display when stations are close together.

D. RiverPro Product Formatter, Version 3.0:

1) RiverPro is able to directly invoke the new Hydro Time Series functionality from the Forecast Point Stage/Discharge Data window. This allows the user to directly get to all of the time series viewing and editing functions while in RiverPro without having to have the HydroView program or Hydro Time Series program running. Now it should be very easy to quickly find and edit data in the database in order to recreate a RiverPro product.

2) If the user creates products that contain requests for data values from the database that are in coded form (e.g., present weather, past weather, etc.), RiverPro now translates those coded numbers into English phrases. For example, if the user asks for XP data (i.e., past weather) and retrieves coded value 7 from the database, RiverPro translates that coded value to the English phrase "snow or rain and snow mixed". This translation occurs for the SHEF physical elements:

-- AF (surface frost intensity)
-- AM (surface dew intensity)
-- GR (ground frost structure)
-- GS (ground state)
-- HI (stage trend)
-- NC (river control)
-- PE (pressure characteristic)
-- PT (precipitation type)
-- XP (past weather)
-- XW (present weather)

3) The use of type-source ranking was incorporated into the remaining components of RiverPro. Previously, the type-source ranking was only available when specifying observed data type codes in the "PE" variables available in the RiverPro templates. Now the type-source ranking is supported for the forecast data types in the "PE" variables, and also in the traditional template variables such as <ObsStg> and <MaxFcstStg>. The type-source ranking feature instructs the program to use the highest-ranking source of data for a given location-physical element-type code; if a value is not available, then the next highest rank is used, etc.

4) Historical crests that are marked as "suppressed" in the Crest table are no longer used to compute record stage. They are also no longer included in the available crests in the Crest Comparison window.

5) Window button usage is modified to be consistent across the application using OK, Apply, and Close to remove earlier window operation ambiguities.

E. Hydro Time Series, Version 3.0:

1) The time series functionality that previously existed within the HydroView GUI application has been completely revamped and enhanced. It has been packaged two ways, as a complete stand-alone GUI application (hence this Section E of the Release Notes) and as a library to be called from other applications such as HydroView and RiverPro. See Items C.3, C.4, and D.1 above.

The stand-alone GUI application, "Hydro Time Series", takes its place alongside HydroBase, HydroView, and RiverPro on the main D2D menus. The user may invoke this new stand-alone GUI application from the D2D menus without having any other WHFS applications up.

Invocation of the "Hydro Time Series" application brings up the Time Series Control dialog. There is a new User Guide for this application which is not repeated in these release notes. Provided here is a simple overview of the principle user features of the application.

-- display performance is much improved over the old HydroView time series
-- a comprehensive Time Series Control dialog is provided to select time period, stations, and data types for display
-- users may pre-define groups of time series displays for routine and repetitive recall - highly user configurable
-- the group configuration file is manipulated either via HydroBase GUI or via UNIX ASCII file editing tools (at: /awips/hydroapps/whfs/local/data/app/timeseries/group_definition.cfg)
-- a completely new graphical display (influenced by the HydroMet application) is provided
-- a tabular time series display is integrated that results from merging and enhancing the old Stations Observations and Station Forecasts windows from HydroView
-- users may edit all data (observations and forecasts) graphically
-- users may edit all data (observations and forecasts) using the tabular display
-- users may create entirely new time series via the tabular display

-- users may SHEF encode any data and send on the AWIPS WAN via the tabular display
-- users may print graphical and tabular time series
-- users may save graphical (*.gif) and tabular time series to files
-- river flow values are derived from river stage values when rating curves are available and vice versa in both the graphical and the tabular displays
-- users may filter the station list by various broad data types

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F. WHFS System Functions, Version 3.0:

1) The ability is added to send SHEF messages point-to-point on the AWIPS WAN using the AWIPS distributeProduct utility. The send ability is added into the shef_issue script in /awips/hydroapps/whfs/local/bin/. The transmit ability is added into distributeProduct. The receive ability is provided by the new script process_shef_msg in /awips/hydroapps/whfs/standard/bin/. It receives the incoming SHEF message, copies it to the SHEF data ingest directory and copies it to the fxa textdb.

2) The SHEF Decoder is modified:

-- to buffer IngestFilter queries by location identifier to aid performance
-- to add new control tokens (see Item 3) below)
-- to add a new performance log file to be used for diagnostic purposes
-- to always overwrite missing data regardless of token settings
-- to automatically apply user-defined gross range check limits
-- to automatically apply user-defined reasonableness range check limits
-- to interpret the SHEF data qualifier codes in order to set the internal quality_code bit mask to be consistent ("R" and "B" translate to a "bad" internal quality_code while "Q" and "F" translate to a "questionable" internal quality_code)
-- to write "bad" data (i.e., data that fail the gross range check or that come in with the SHEF data qualifier set to "R" or "B") to either the RejectedData table or to the normal PE data tables depending on the token shef_post_baddata
-- to look for data values that exceed the user-defined alert threshold
-- to look for data values that exceed the user-defined alarm threshold
-- to initiate the computation of the latest maximum forecast stages and flows following receipt of messages that contain forecast stage or flow data

3) New Apps_defaults tokens have been defined for the SHEF Decoder:

-- shef_alertalarm (ON/OFF, default = ON)
screen incoming data against alert and alarm thresholds
-- shef_load_maxfcst (ON/OFF, default = ON)
after each product that resulted in forecast height or discharge data being posted, load the maximum forecast data into the RiverStatus table
-- shef_perflog (ON/OFF, default = OFF)
create separate performance log file for debugging
-- shef_post_baddata (PE/REJECT, default = REJECT)
post data that fail the Q/C certainty check to the regular PE data tables or to the RejectedData table
-- shef_post_latest (ON/OFF/VALID_ONLY, default = OFF)
post or do not post data to the LatestObsValue table OR only post data that have passed the Q/C certainty check
-- shef_procobs (ON/OFF, default = OFF)
post processed (i.e., SHEF type-source=P*) data to the ProcValue table (=OFF) or to the regular PE observation data tables (=ON)

Note, the shef_post_latest token is NOT NEW but the VALID_ONLY option for its value IS NEW for Release 5.0.

4) The METAR-TO-SHEF Translator program was updated to the latest version available from STR. The Translator now properly decodes the T group in all cases and it handles trace precipitation properly for SHEF. The script to purge UNIX files was fixed to handle any log file produced by the Translator.

5) The old Data Review Q/C analysis batch program has been modified into the new rate-of-change (roc) checking ("roc_checker") batch program. Its purpose is to compare computed roc values with user-defined rate-of-change quality control checks and user-defined alert and alarm thresholds. This program is now set up to run automatically on the "oper" user's crontab every 10 minutes. It sets the quality_code field of data values that fail Q/C checks and it logs exceedances of alert and alarm thresholds to the new AlertAlarmVal table for further processing (see Item 6 below). As delivered, the UNIX run script for the roc_checker program (run_roc_checker) is set up to look for problems in the Height table and the Precip table. The user must customize this script to look for other rate-of-change violations.

6) A new batch program, report_alarm, is provided that reads exceedances of alert and alarm thresholds detected by the SHEF Decoder and the roc_checker that have been entered into the new AlertAlarmVal table. This program then writes an alert/alarm product into the WHFS Product directory and sends it to the textDB, which the user can set to trigger AWIPS alarms. The UNIX run script, run_report_alarm, can be customized by the user. This program is now set up to run automatically on the "oper" user's crontab every 10 minutes.

7) The "oper" user's crontab for ds1, whfs_crontab_ds1, has been modified by adding a new job every 10 minutes that runs the script, run_alarm_whfs, which simply packages the two jobs above in Items 5) and 6) so that they run together with the roc_checker program followed immediately by the report_alarm program.

8) The AWIPS D2D Hydro Applications menus have been updated to invoke four new hydro applications, the Hydro Time Series, XDAT, XNAV, and XSETS with the last three only available at RFCs.

9) The DPA/HDP Decoder was modified to properly find and decode the Supplemental Data portion of the product that was not always properly decoded starting with AWIPS Release 4.3.1.

10) A rare occurrence of a hang of the DPA Decoder program is fixed.
If a DPA product comes in with an unrecognizable Adaptable Parameters section and an unrecognizable Supplemental Data section, the decoder could hang previously.

11) The precip_accum cron job that runs on as2 at 25 and 45 after every hour is eliminated. This reduces the overall load on the Informix engine because HydroView will now compute these precipitation accumulations only when the user requests them and not all the time as previously. Therefore, the crontab file at /awips/hydroapps/whfs/local/bin/whfs_crontab_as2 is removed.

G. Basic Directory/File Structure for WHFS Version 3.0 for AWIPS Build 5.0:

/data/fxa/ispan/hdp/	-- undecoded DPA/HDP radar messages
/data/fxa/ispan/hydro/	-- undecoded SHEF messages
/awips/hydroapps/	-- root of all Hydro applications
/awips/hydroapps/.Apps_defaults	-- National control file of hydro tokens
/awips/hydroapps/.Apps_defaults_site	-- site overrides/additions to National control file of hydro tokens
/awips/hydroapps/set_hydroapps_perms.ksh	-- all sites permissions setting
/awips/hydroapps/set_rfcapps_perms.ksh	-- RFC additional permissions
/awips/hydroapps/bld50_docs/	-- Release 5.0 Hydro documents
/awips/hydroapps/ihfsdb_conversion/	-- IHFS_DB conversion scripts

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/awips/hydroapps/shefdecode/                -- root of the SHEF Decoder
/awips/hydroapps/shefdecode/bin/            -- executable & start/stop scripts
/awips/hydroapps/shefdecode/input/          -- SHEF parameter definition file
/awips/hydroapps/shefdecode/logs/           -- root of SHEF Decoder logs
/awips/hydroapps/shefdecode/logs/decoder/   -- SHEF Decoder daily logs
/awips/hydroapps/shefdecode/logs/product/   -- SHEF Decoder product logs
/awips/hydroapps/shefdecode/raw_data/       -- undecoded SHEF messages
                                               (not used, see above)

/awips/hydroapps/whfs/                      -- root of the WHFS applications

/awips/hydroapps/whfs/local/                    -- root of WHFS local
                                                   configuration
/awips/hydroapps/whfs/local/bin/                -- crontabs, local_hydro_env,
                                                   and shef_issue

/awips/hydroapps/whfs/local/data/
/awips/hydroapps/whfs/local/data/app/
/awips/hydroapps/whfs/local/data/app/hydroview/  -- HydroView cfg files (none)
/awips/hydroapps/whfs/local/data/app/metar2shef/ -- METAR translator config file
/awips/hydroapps/whfs/local/data/app/riverpro/   -- user's RiverPro templates
/awips/hydroapps/whfs/local/data/app/timeseries/ -- Hydro Time Series cfg file
/awips/hydroapps/whfs/local/data/backup_db/      -- site database exports
/awips/hydroapps/whfs/local/data/geo/            -- user's geo reference files
/awips/hydroapps/whfs/local/data/grid/           -- root of grid data files
/awips/hydroapps/whfs/local/data/grid/misc/      -- accum FFG & precip grids
/awips/hydroapps/whfs/local/data/grid/stage1/    -- decoded DPA radar grids
/awips/hydroapps/whfs/local/data/grid/stage1_error/ -- undecodable DPA grids
/awips/hydroapps/whfs/local/data/grid/stage1_raw/-- undecoded DPA messages
                                                    (not used, see above)
/awips/hydroapps/whfs/local/data/grid/stage2/    -- Stage II output grids
/awips/hydroapps/whfs/local/data/grid/stage3/    -- Stage III output grids
/awips/hydroapps/whfs/local/data/image/          -- user-saved GIF files
/awips/hydroapps/whfs/local/data/import/         -- user import data
                                                    (e.g., rating curves)
/awips/hydroapps/whfs/local/data/log/            -- root of WHFS log files
/awips/hydroapps/whfs/local/data/metar_input/    -- input for METAR messages
/awips/hydroapps/whfs/local/data/output/         -- currently not used
/awips/hydroapps/whfs/local/data/product/        -- RiverPro output products,
                                                    shef_issue output products,
                                                    alert/alarm products
/awips/hydroapps/whfs/local/data/report/         -- HydroBase & Hydro Time
                                                    Series reports

/awips/hydroapps/whfs/local/src/
/awips/hydroapps/whfs/local/src/env/
/awips/hydroapps/whfs/local/src/utilprog/

/awips/hydroapps/whfs/standard/                  -- root of WHFS standard
                                                    configuration
/awips/hydroapps/whfs/standard/bin/              -- root of WHFS executables
/awips/hydroapps/whfs/standard/bin/pa/           -- root of the Shared Window
                                                    Server executables
/awips/hydroapps/whfs/standard/data/             -- root of WHFS standard data
/awips/hydroapps/whfs/standard/data/help/
/awips/hydroapps/whfs/standard/data/image/
/awips/hydroapps/whfs/standard/doc/              -- installation & release notes


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